

Remarks

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1-33 are currently being prosecuted. The Examiner is respectfully requested to reconsider his rejections in view of the remarks as set forth below.

Rejection under 35 U.S.C. § 103

Claims 1 and 2 stand rejected under 35 U.S.C. § 103 as being obvious over Lanigan et al. (U.S. Patent 6,081,292) in view of Hauck et al. (U.S. Patent 5,760,415). This rejection is respectfully traversed.

The Examiner states that Lanigan shows an apparatus for positioning a grappler relative to a container. The apparatus includes a plurality of cameras in the form of video devices for photographing images of the container and also including an image processor to detect two-dimensional coordinates of the corner fittings. The Examiner admits that the apparatus lacks forming an arithmetic operation of three-dimensional position on the basis of two-dimensional coordinates.

The Examiner relies on Hauck et al. to teach a system for high precision three-dimensional measurements of objects. The Examiner feels it would have been obvious to one of ordinary skill in the art to add a three-dimensional measuring system as taught by Hauck et al. to the apparatus disclosed by Lanigan et al. The motivation suggested by the Examiner would be to obtain an apparatus that can provide a better quality image.

Regarding claim 2, the Examiner suggested that it would have been obvious to add light sources so that the apparatus can be used at night. Applicants submit that claims 1 and 2 would not be obvious over this combination of references.

Applicants wish to point out that the two references are completely different from the present invention in terms of their objects, constructions and effects. For example, Lanigan et al. is used to detect an amount of parallelism between the hoisting accessory and the container so that the operator can detect when the two are inclined to each other. Hauck et al. shows a technique to obtain a three-dimensional position of an object as a function of time. These differ from the present invention where the three-dimensional position of a loading object is calculated based on the distance between the hoisting accessory and the container and on the positional image of the corner fittings photographed by the camera. The present invention is not obtainable based on the two references cited by the Examiner.

Claim 1 not only describes that a plurality of cameras are disposed downwardly but also that they photograph the corner fittings. While the video devices 100 in Lanigan et al. photograph the corner areas including the locking holes, it is only to locate the position of the corners. In the present claimed invention, the image processor takes the video signals from the cameras to detect a two-dimensional coordinates of the corner fittings. The Examiner has referred to processor 111 in Figure 4 to show this function. However, this processor does not detect the two-

dimensional coordinates. Furthermore, Lanigan et al. does not teach an arithmetic and control unit, as admitted by the Examiner. The Examiner relies on Hauck et al. to teach this feature. However, Applicants submit that the Hauck et al. reference also does not show this feature.

The claims require that this unit perform an arithmetical operation of a three-dimensional relative position on the basis of the two-dimensional coordinates of the corner fittings as well as distance information. Hauck et al. at best utilizes cameras to determine the position of the container using a triangulation system. There is no determination of the two-dimensional coordinates of the corner fittings. The control unit does not receive information regarding the two-dimensional coordinates of the corner fittings to perform an arithmetical operation on the three-dimensional relative position of the container. Accordingly, Applicants submit that neither of the references nor their combination teach the photographing of the corner fittings in order to detect two-dimensional coordinates and to perform an arithmetical operation of a three-dimensional relative position of the container based on these two-dimensional coordinates of the corner fittings. For these reasons, Applicants submit that claims 1 and 2 define over this combination of references.

Furthermore, in regard to claim 2, the Examiner points out that it would have been obvious to include lights. However, claim 2 requires that the lights are to illuminate the corner fittings. This is not just for general illumination, but so that the image processor can better detect

the two-dimensional coordinates. Accordingly, Applicants submit that this feature is likewise not seen in the references.

Claims 3-33 stand rejected under 35 U.S.C. § 103 as being obvious over Lanigan et al. in view of Hauck et al. and further in view of Erikkilä (U.S. Patent 6,256,553). This rejection is respectfully traversed.

The Examiner admits that the combination of Lanigan et al. and Hauck et al. does not show the controller for adjusting the light based on distance. The Examiner relies on Erikkilä to show this feature. In particular, the Examiner points out that this reference teaches that before the picture is taken the zoom, focus and light are corrected. Applicants submit that these claims are not obvious over this three-way combination of references.

Applicants point out that claim 3 does not merely say that the light is adjusted but rather that the outputs of the plurality of lights are adjusted based on the distance between the hoisting accessory and the container. This particular adjustment is used in conjunction with the detection of the two-dimensional coordinates of the corner fittings. This differs from the Erikkilä reference. As described in the paragraph bridging columns 11 and 12, the camera and brightness are checked to see if they are correct before sending a picture. This is in regard to the observation of the swing of the container. Applicants submit that Erikkilä also does not show the adjustment of the light sources based on the distance, especially in regard to the detection of the two-dimensional

coordinates. Accordingly, Applicants submit that claim 3 is likewise allowable.

Claims 4-33 depend from allowable claims 1-3 and as such are also considered to be allowable. In addition, Applicants submit that the dependent claims also teach features not shown in the references. Thus, claims 4-12 and 16-18 describe the image processor as detecting corner fittings in accordance with template matching processing.

Although the Examiner pointed out in the Office Action that "Lanigan describes that template matching is performed," Lanigan does not describe the template matching at all actually.

Lanigan certainly describes "detect the corner fittings," but this description only means that the corner fittings are photographed by a camera.

Therefore, it is impossible to conclude that Lanigan has the description of template matching on the basis of the above description in Lanigan.

Claims 13-16 discuss changing the magnification of the cameras based on distance information to keep the size of the image constant. Claims 19-33 again discuss the image processor in regard to template matching processing and include other means which utilize this template matching information. Since none of the three references teach the concept of the template matching, Applicants submit that these dependent claims are even further allowable. Applicants submit that the references cited by the Examiner do not teach the concepts that are

presently described and claimed. Since the references do not teach this basic concept, Applicants submit that the claims presently define thereover.

Conclusion

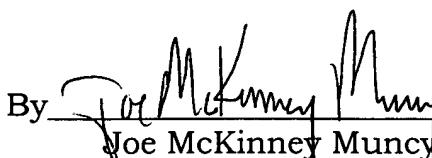
In view of the above remarks, it is believed that the claims clearly distinguish over the patents relied on by the Examiner, either alone or in combination. In view of this, reconsideration of the rejections and allowance of the claims are respectfully requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert F. Gnuse (Reg. No. 27,295) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time use.

Respectfully submitted,

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